Haematuria

Miss Eva Bolton
Consultant Urologist (Bladder and Renal)
Imperial College Healthcare NHS Trust

- Haematuria is the presence of

red blood cells in the urine

- It can either be:
  - Macroscopic
    - (Visible / gross haematuria)
  - Microscopic
    - (Non-visible / dipstick positive haematuria)

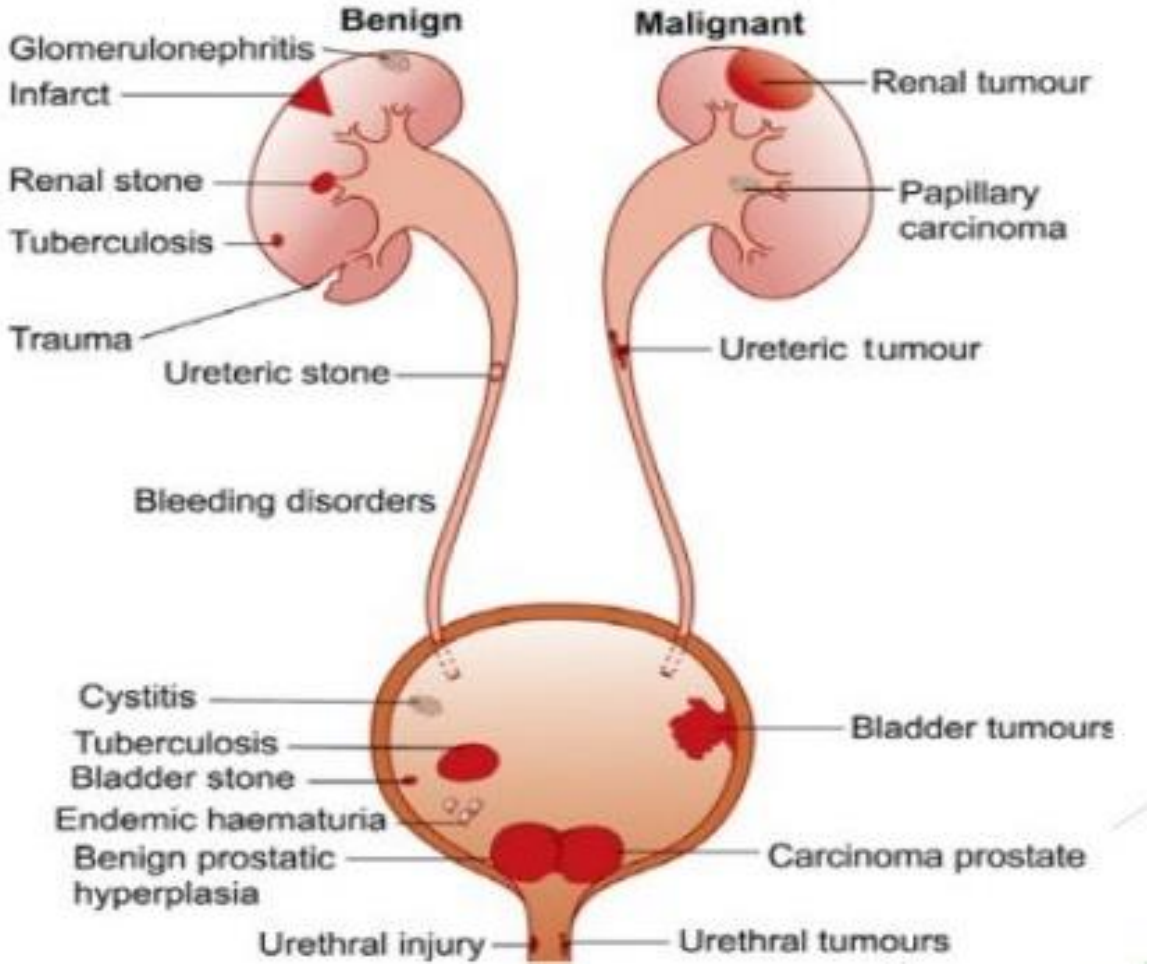
The History

- Hx
  - Painful or painless
  - How long is the history
  - Any previous episodes
  - Associated LUTS
  - Associated fever/rigor
- PMH
  - Stones
  - RCC/TCC
  - UTI
- FH
  - Stones
  - RCC/TCC
- SH
  - Alanine dyes
  - Benzen derivatives
  - Smoker

Examination and Investigations

- O/E
  - What does the urine look like
  - Retention?
  - Any palpable renal or bladder mass
- Ix
  - Bedside
    - Urine dip
  - Lab
    - MSU
    - FBC, U+E
  - *Flexible cystosocpy*
  - *Imaging*
    - *CT urogram/USKUB*

Location, Location, Location!



When to refer? – significant health care burden

- 27% of all Urologic evaluation

Non-visible haematuria

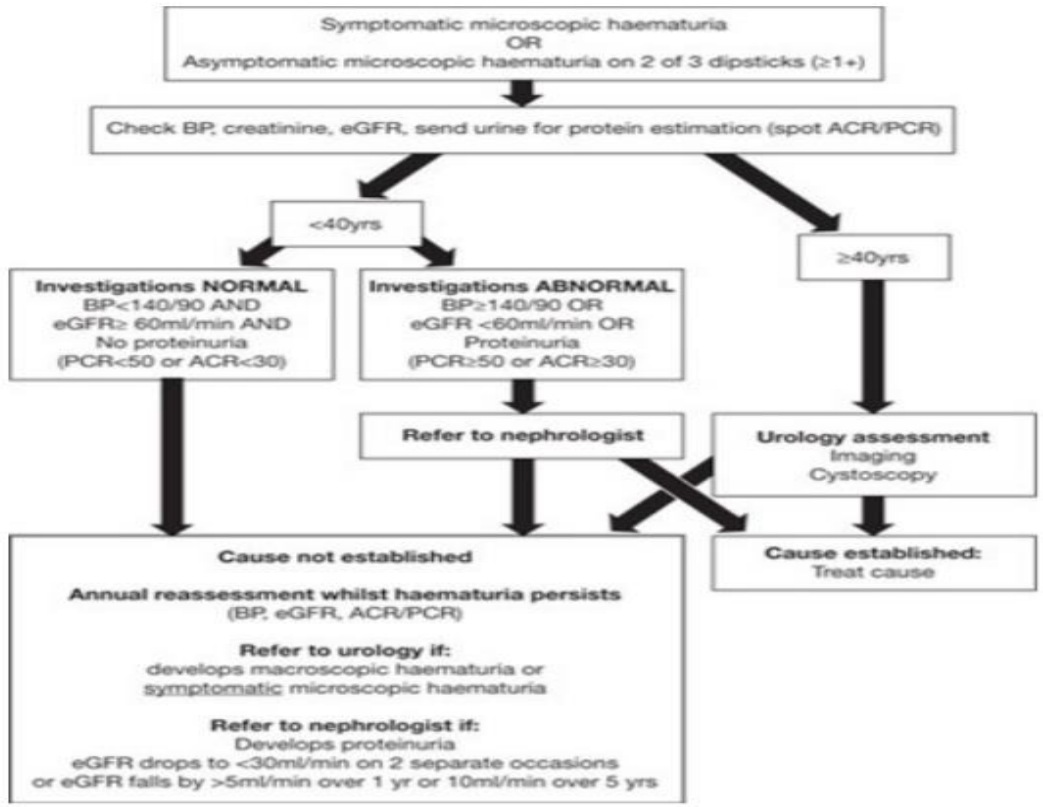
- +ve urine dip with
  - High WCC
  - Dysuria
- Or clinical suspicion of TCC/RCC
- Micro haematuria noted in 6.5% of healthy participants in screening study (2.4-31.1%)

Visible haematuria

- No Age /Risk Stratification Decision
- Haematuria with no associated UTI or continues despite treatment of UTI
- Or clinical suspicion of TCC/RCC
- Acute referral if clots/claret haematuria or Hb drop

Antoniewicz A et al, ISRN Urol. 2012; 2012:710734

Davis R et al, J Urol 2012; 188:2473



Microscopic haematuria

- Ignore samples with a trace of blood. Abnormal only if 1+ of blood or more. If painless must have 1+ of blood or more on at least 2 out of 3 occasions.
- Do not attribute microscopic haematuria to aspirin or warfarin.
- Investigate as per the flow chart above.
- Refer patients aged 60 or over with unexplained non-visible haematuria and either dysuria or leucocytosis via 2ww pathway for investigation for bladder cancer.

PROSPECTIVE ANALYSIS OF 1,930 PATIENTS WITH HEMATURIA TO EVALUATE CURRENT DIAGNOSTIC PRACTICE

M.H. Khadra, R.S. Pickard, M. Charlton,P.H. Powell, D.E. Neal

1,930 patients -prospectively study in hematuria clinic (October 1994 and March 1997)

Basic demographics, history and examination, routine blood tests, urinalysis and cytology. All patients underwent plain abdominal radiography, renal ultrasound, IVP and flexible cystoscopy.

RESULTS: 1,194 males and 736 females ,Age of 58 years (range 17 to 96)

Overall, 61% of patients had no basis found for hematuria, 12% had bladder cancer, 13% had urinary tract infection and 2% had stones. Kidney and upper tract tumors were noted in 14 patients (0.7%), including 4 who presented with microscopic hematuria. If only ultrasound or IVP had been performed 4 of these cases would have been missed. Of 982 patients presenting with microscopic hematuria 51 had cancer. Bladder cancer was found in 7 patients younger than 40 years.

- At age 50 to 59 years, malignancy was identified in 20.4 versus 1.9 percent of men with macroscopic versus microscopic hematuria, respectively, and in 8.9 versus 1.9 percent of women with macroscopic versus microscopic hematuria.

- At age 60 to 69 years, malignancy was found in 28.9 versus 7.9 percent of men with macroscopic versus microscopic hematuria, and 21.1 versus 4.5 percent of women with macroscopic versus microscopic hematuria

Follow-up after negative initial investigations

**No published guidelines

- Microhaematuria patient
  - Yearly Urine Analysis
  - Discontinue if –ve for 2 years
  - Re-evaluate within 3 to 5 years if persistent Microhaematuria

- Consider full evaluation if recurrence of Gross Haematuria

Davis R J et al 2012

Bladder Cancer Guidance

Recommendations	Refer people using a suspected cancer pathway referral (for an appointment within 2 weeks) for bladder cancer if they are: • aged 45 and over and have: - unexplained visible haematuria without urinary tract infection or - visible haematuria that persists or recurs after successful treatment of urinary tract infection, or • are aged 60 and over and have unexplained non-visible haematuria and either dysuria or a raised white cell count on a blood test. [new 2015] Consider non-urgent referral for bladder cancer in people aged 60 and over with recurrent or persistent unexplained urinary tract infection. [new 2015]

Renal Cancer Guidance

Recommendations	Refer people using a suspected cancer pathway referral (for an appointment within 2 weeks) for renal cancer if they are aged 45 and over and have: • unexplained visible haematuria without urinary tract infection or • visible haematuria that persists or recurs after successful treatment of urinary tract infection. [new 2015]

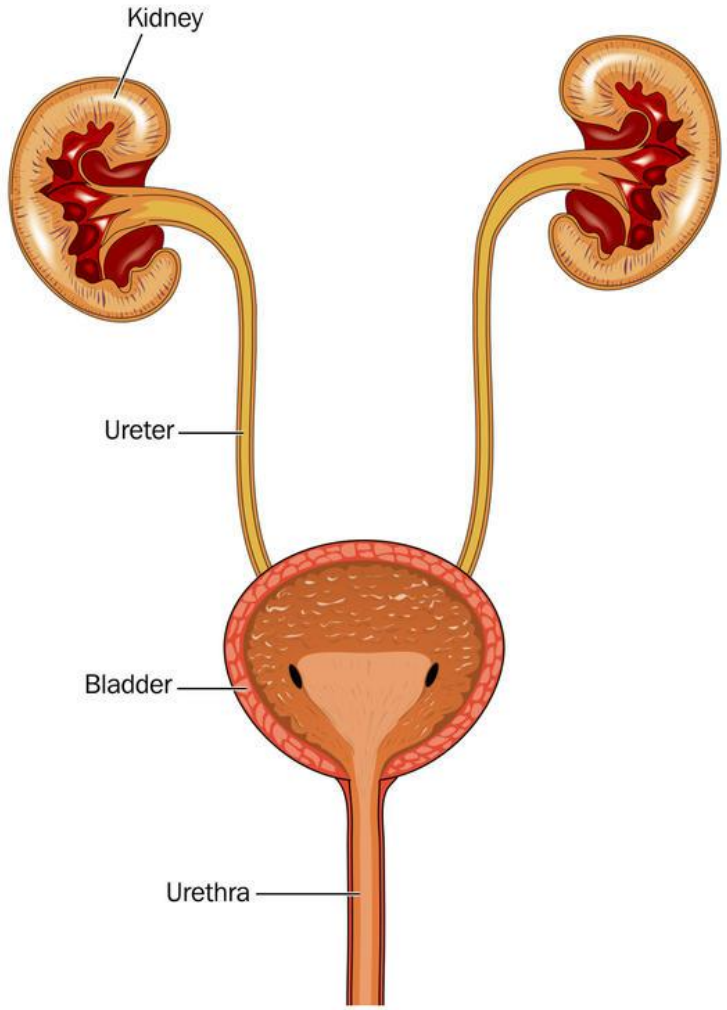
Bladder Cancer

Background

- 2nd commonest urological malignancy
- >90% Transitional Cell Carcinoma (TCC)
- 1-7% SCC
  - Associated with chronic inflammation
  - Schistosoma haematobium, long term catheter
- 2% Adenocarcinoma
  - Rare, poor prognosis
  - 1/3 originate in urachus
  - Long term complication of bowel implantation into urinary tract

Transitional Cell Carcinoma

- >90% of bladder cancers
- Can involve renal pelvis, ureter, bladder
- Single or multifocal
- Classified as superficial or muscle invasive



Bladder Caner Risk factors

- Cigarette Smoking
  - Major cause in developing world
  - 2-5 fold increased risk of bladder Ca + recurrence
- Male sex
- Age
- Occupational Exposure
  - Aromatic hydrocarbons – rubber, dye, hairdressers, etc
- Drugs – cyclophosphamide
- Pelvic radiotherapy

Bladder Tumour - Staging

- Ta - non-invasive papillary cancer
- Tis – carcinoma in situ – high grade
- T1 – tumour invades submucosa
-
- T2a – superficial muscle
- T2b – deep muscle

- T3a – perivesical tissue microscopically
- T3b – perivesical tissue macroscopically

- T4a – prostate, uterus, vagina
- T4b – pelvic wall or abdominal wall

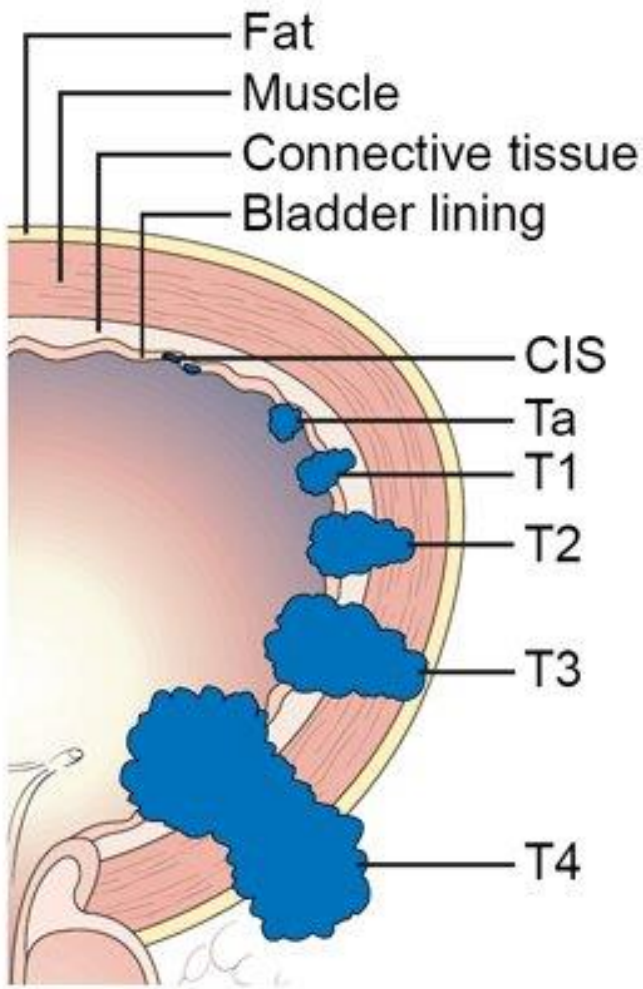


Diagram showing the T stages of bladder cancer
© CancerHelp UK

Bladder Cancer Staging

- N1 – single <2cm
- N2 – single >2 to 5 cm, multiple < 5cm
- N3 - > 5cm

- M0 – No
- M1 - Yes

Bladder Cancer – Presentation

- Painless visible haematuria -
  - 20% patients with VH will have malignancy
- Asymptomatic Non Visible Haematuria
  - 5% of patients with NVH will have malignancy
- Irrigative LUTS – urgency, suprapubic pain
- Recurrent UTI
- Pain, Weight loss, lymphoedema

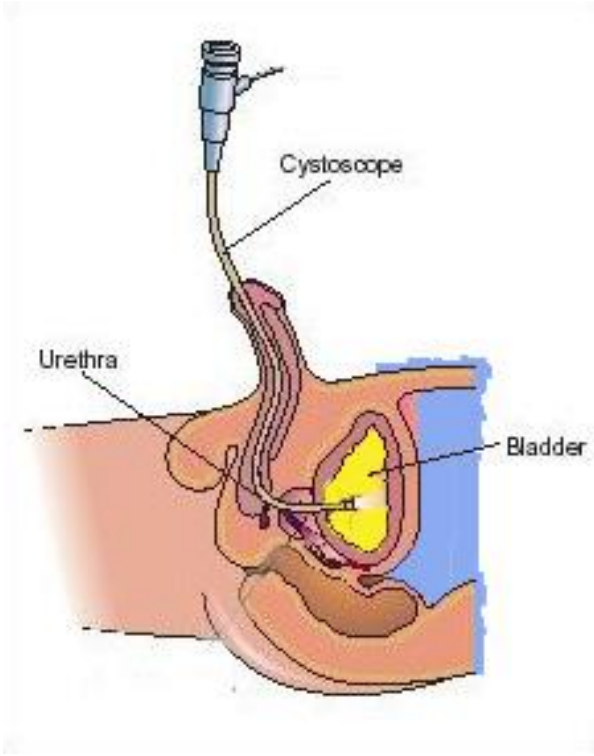
Investigations

- Clinical assessment – history, examination, urinalysis, urine cytology

- Upper tract imaging
  - USS KUB
  - CT Urogram/MRI
  - IVU

- Direct visualisation of bladder - CYSTOSCOPY

Flexible cystoscopy



Bladder Cancer – Diagnosis and Staging

- Transurethral Resection of Bladder Tumour (TURBT)
  - GA or Spinal anaesthetic
  - Resect Tumour incl muscle specimen
  - +/- Intravesical Mitomycin
  - 3 way catheter, irrigation
  - Usually overnight stay in hospital
- Staging CT urogram + chest
- MDT

Bladder Cancer – Management

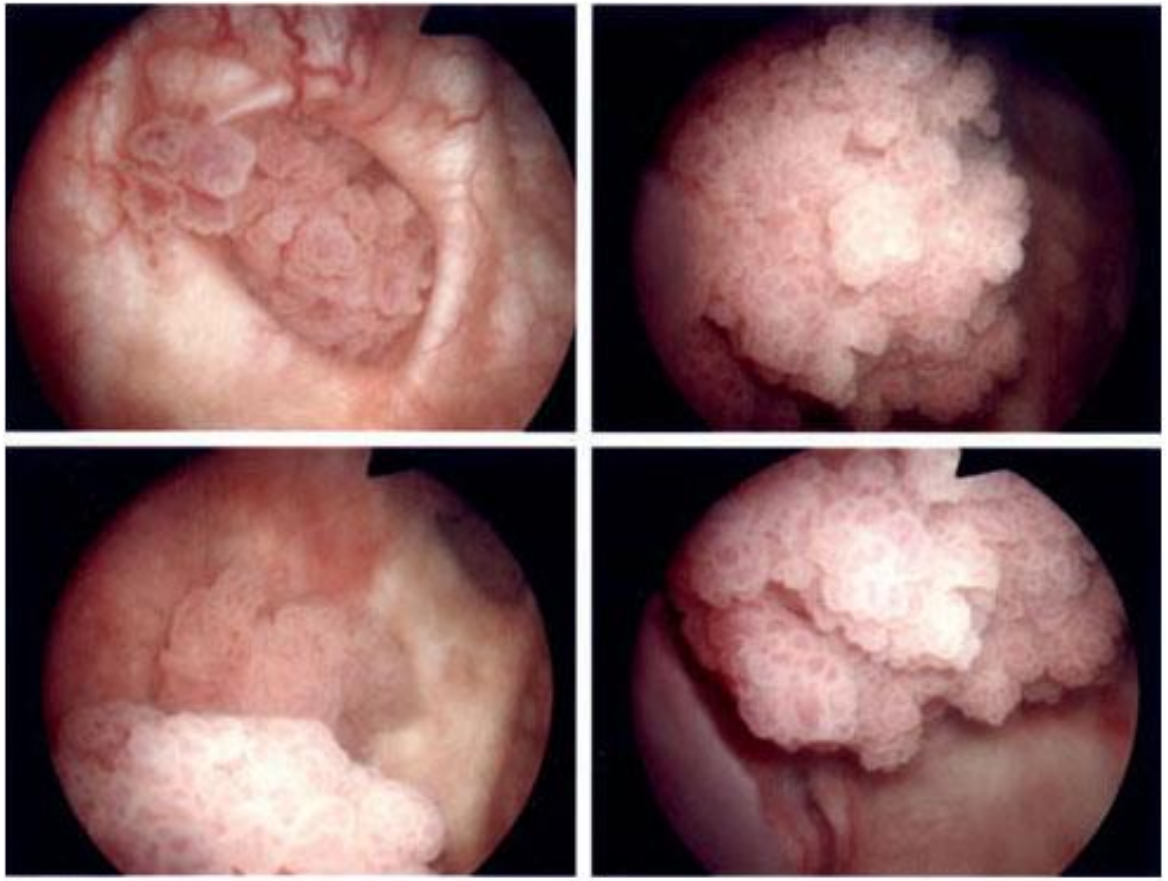
- Results discussed in MDT meeting
- Further treatment depends on grade and stage of tumour - ?muscle invasive ?metastatic
  - Muscle invasive – Cystectomy /Radiotherapy/chemotherapy
  - Superficial – surveillance cystoscopies, intra-vesical chemotherapy

Management of Superficial TCC

- Intravesical Chemotherapy
  - Mitomycin C (MMC), single dose, weekly course. Inhibits DNA synthesis. Reduces risk of recurrence.
  - Bacille Calmette-Guerin (BCG)- immune stimulant. Given as 6 wk course via catheter. Reduces progression. More effective than MMC but more toxic.
  - BCG toxicity – fever, myalgia,irritative symptoms, may need anti-TB therapy for severe systemic symptoms
  - BCG contraindicated in immunosuppressed, pregnant/lactating, after traumatic catheterisation

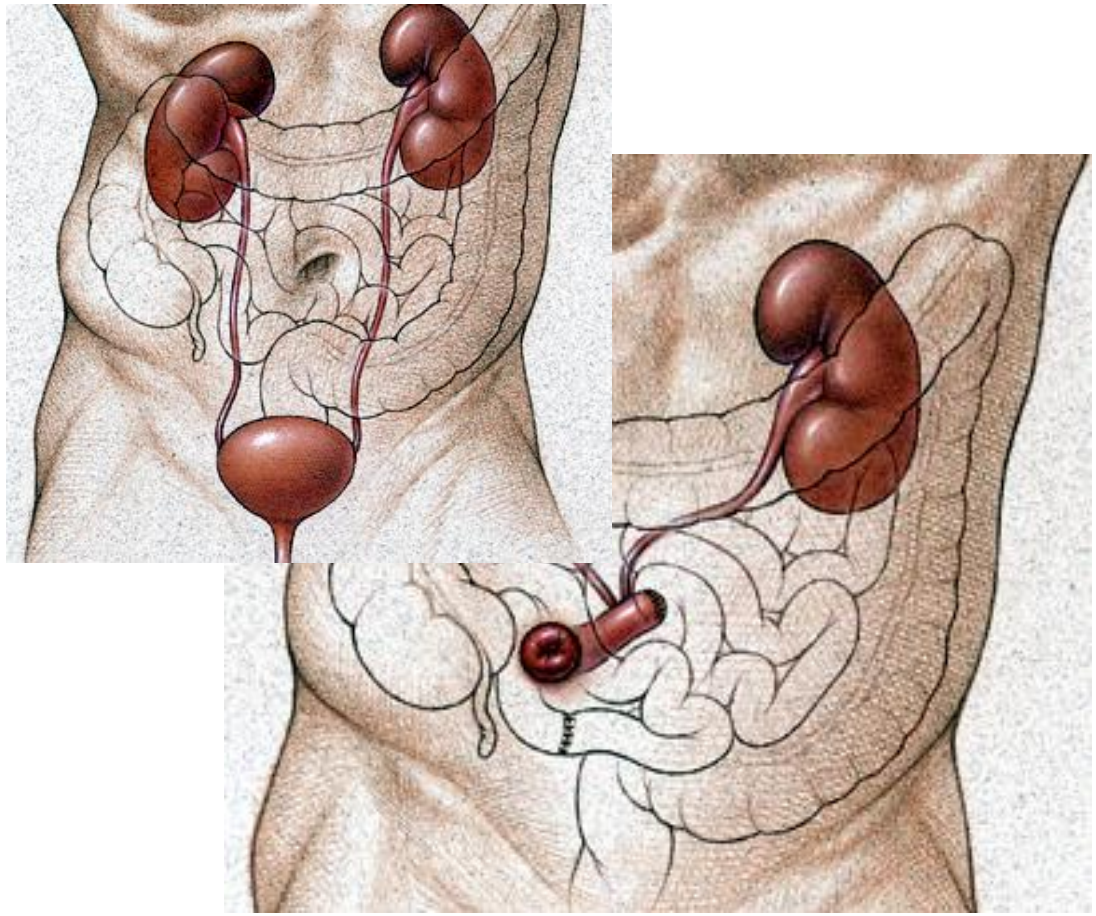
Flexible Cystoscopy Surveillance

- Flexible cystoscopy
- Day unit procedure
- Local anaesthetic – lignocaine gel
- Risks: Bleeding, infection



Management of muscle invasive TCC – radical cystectomy

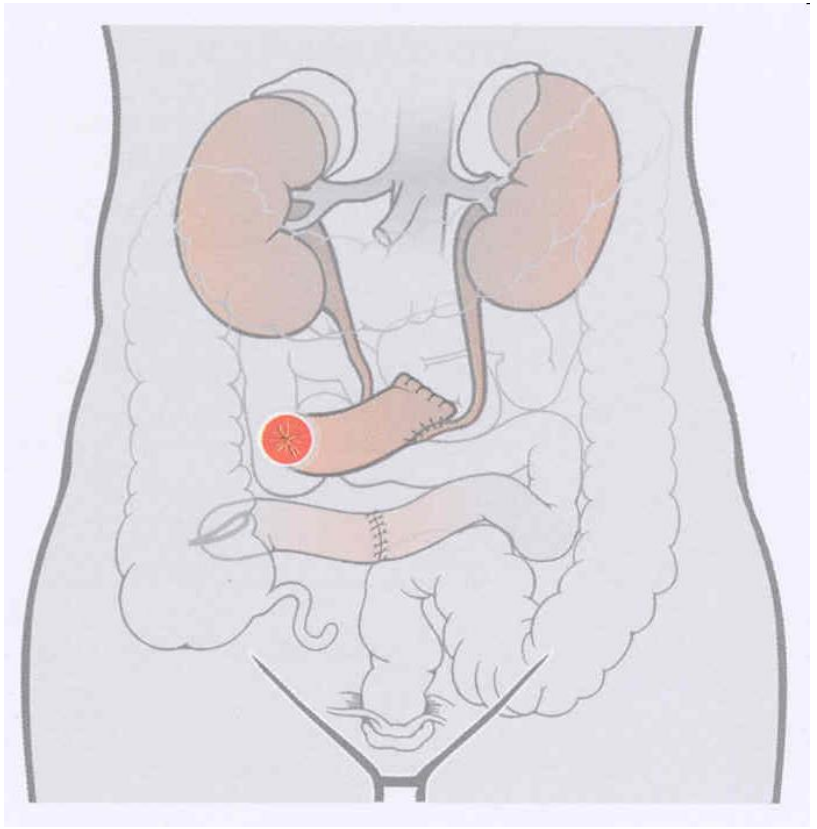
- 5 year survival 3% for MIBC
- Radical Cystectomy
  - Ileal conduit formation
  - Neo-bladder formation
- High risk surgery –
  - 25% have major complication (death, re-operation, sepsis, thromboembolism), ITU care required
- Stoma care



Ileal Conduit

- Stoma Care

- Complications- ileus, urinary leak, stricture, enteral leak, stoma problems



Management of MIBC

- Radical External Beam Radiotherapy
  - Pts unfit/ unwilling to have surgery
  - Results inferior to radical cystectomy
  - May use neo-adjuvant chemotherapy
  - Complications – radiation cystitis, proctitis,
- Palliative treatment
  - Radiotherapy for metastatic bone pain
  - Symptom control
- Use of chemotherapy in locally advanced / metastatic disease

Renal Cancer

Renal Tumours

- Benign v Malignant
- Primary v Secondary

Benign

Adenoma (Von Hippel Lindau)

Haemangioma

Angiomyolipoma (CT Dx)

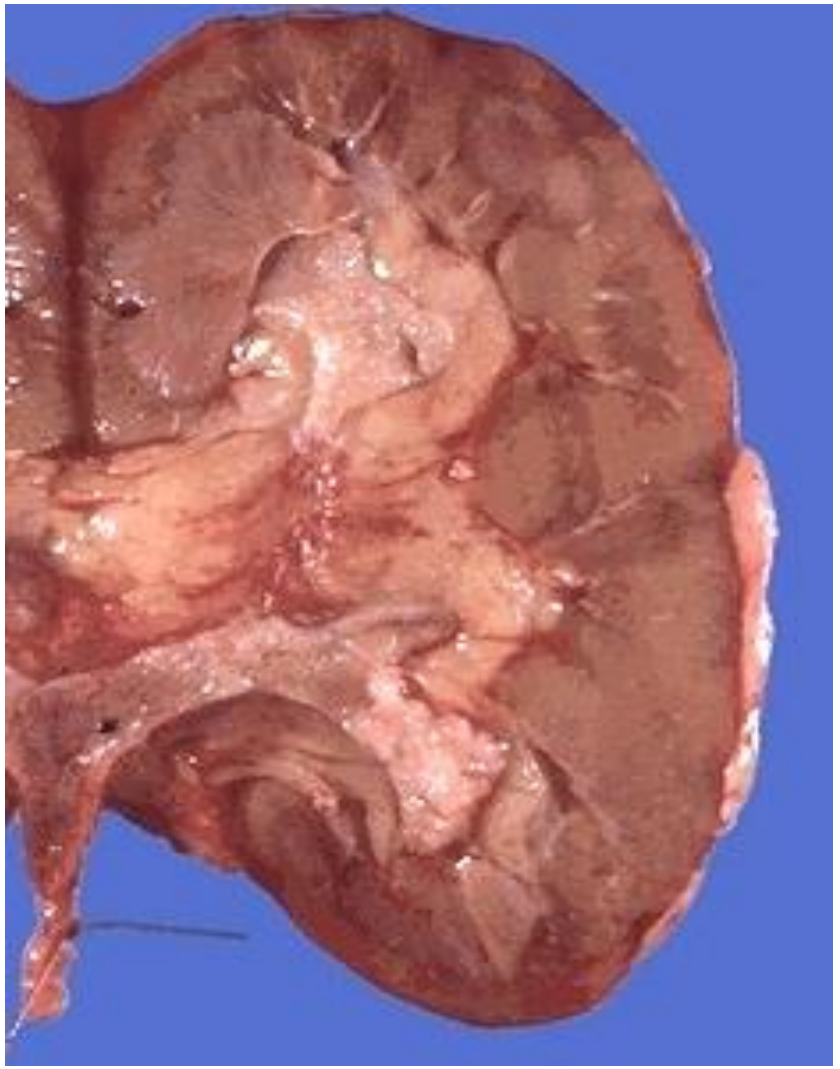
Juxtaglomerular tumour (↑BP)

Malignant Parenchymal

- Renal Cell Carcinoma (RCC)
- Wilms Tumour
- Sarcomas – *rare, poor prognosis.*
- Secondaries
  - *breast*
  - *Lung*
  - *malignant melanoma*
  - *lymphomas*

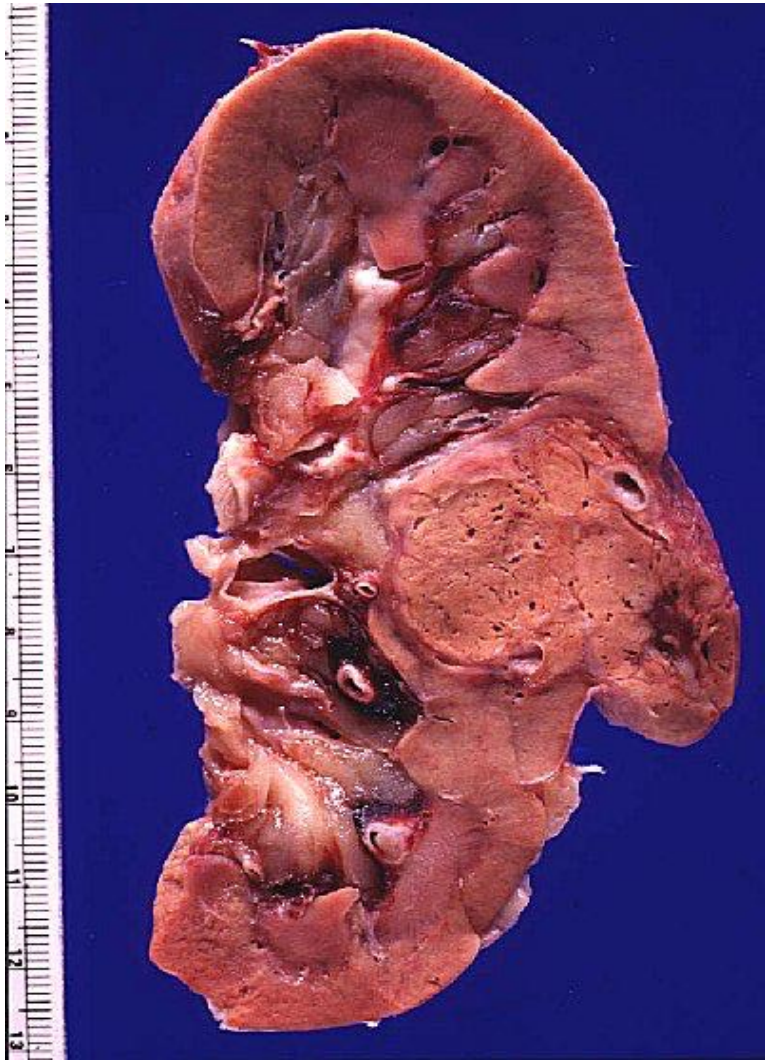
Malignant Renal Pelvis

- Transitional cell carcinoma
- Present with haematuria / obstruction
- Association with bladder & ureteric tumours
- Squamous cell carcinoma – metaplasia secondary to chronic irritation



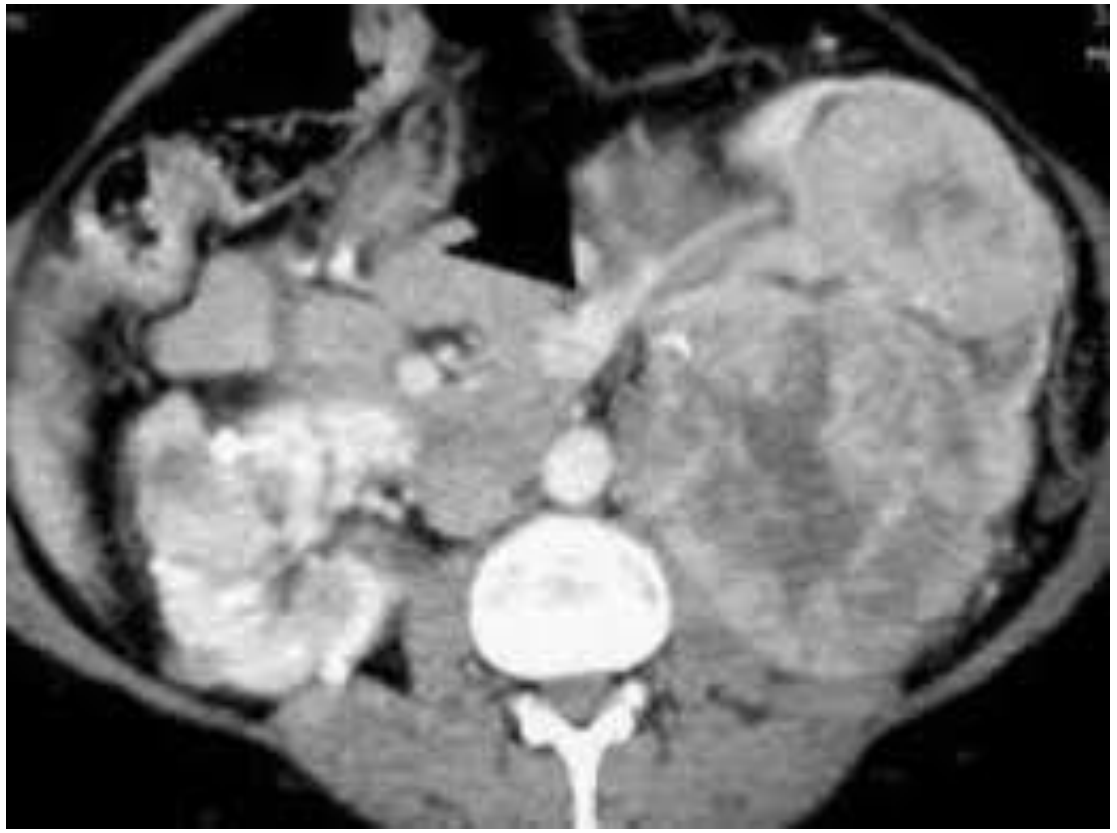
Renal Cell Carcinoma

- Incidence - 3% of cancers
- Age - mainly over 50 yrs
- Sex - 2 M: 1 F
- Geography
- Predisposing factors - genes (VHL), APKD
- Microscopic - adenocarcinoma
- Macroscopic - solid lump, occasionally cystic.



RCC – clinical

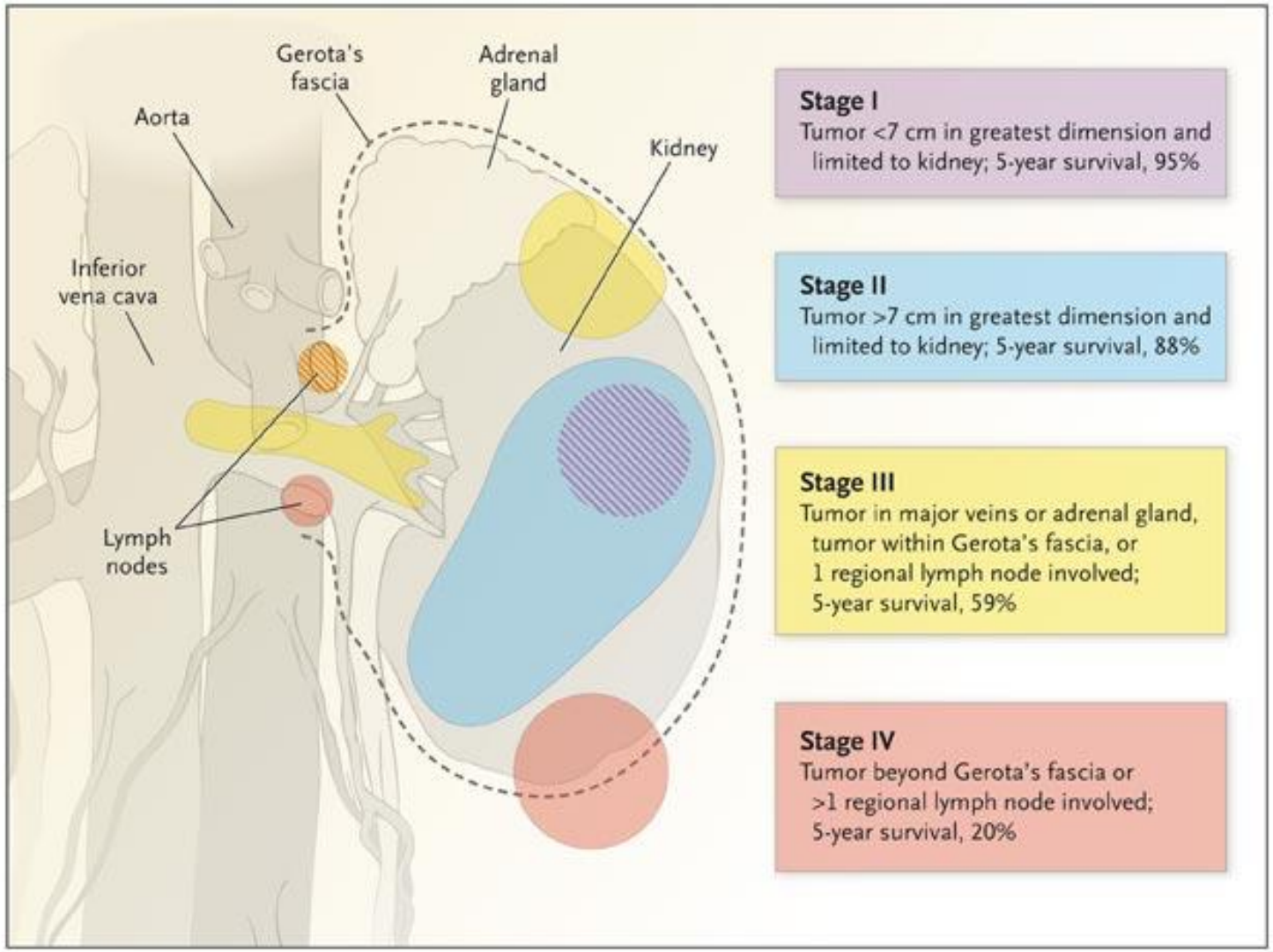
- Presentation
  - incidental finding
  - haematuria, pain, +/- mass
- Diagnosis
  - cross-sectional imaging. 95% solid renal masses=RCC
- Treatment
  - Radical surgery
  - Nephron sparing surgery
  - Survaillance



Renal Cell Carcinoma

- Uncommon symptoms
  - Iron deficiency anaemia
  - Polycythaemia
  - Hypertension
  - Hypercalcaemia due to parathormone-like protein production
  - PUO
  - Elevated ESR
  - Secondary lesions – cannonball lesion on chest X-ray

RCC Staging


Gerota's fascia
Adrenal gland
Aorta
Kidney
Inferior vena cava
Lymph nodes
Stage I
Tumor <7 cm in greatest dimension and limited to kidney; 5-year survival, 95%
Stage II
Tumor >7 cm in greatest dimension and limited to kidney; 5-year survival, 88%
Stage III
Tumor in major veins or adrenal gland, tumor within Gerota's fascia, or 1 regional lymph node involved; 5-year survival, 59%
Stage IV
Tumor beyond Gerota's fascia or >1 regional lymph node involved; 5-year survival, 20%

Renal Cell Carcinoma

- Investigations
  - US
  - CT
  - Arteriography (MR Angiogram)
  - FBC
  - U&Es
  - GFR
  - Chest X-ray

Laboratory Findings

- Anaemia
- Haematuria
- ↑ ESR
- Paraneoplastic syndrome

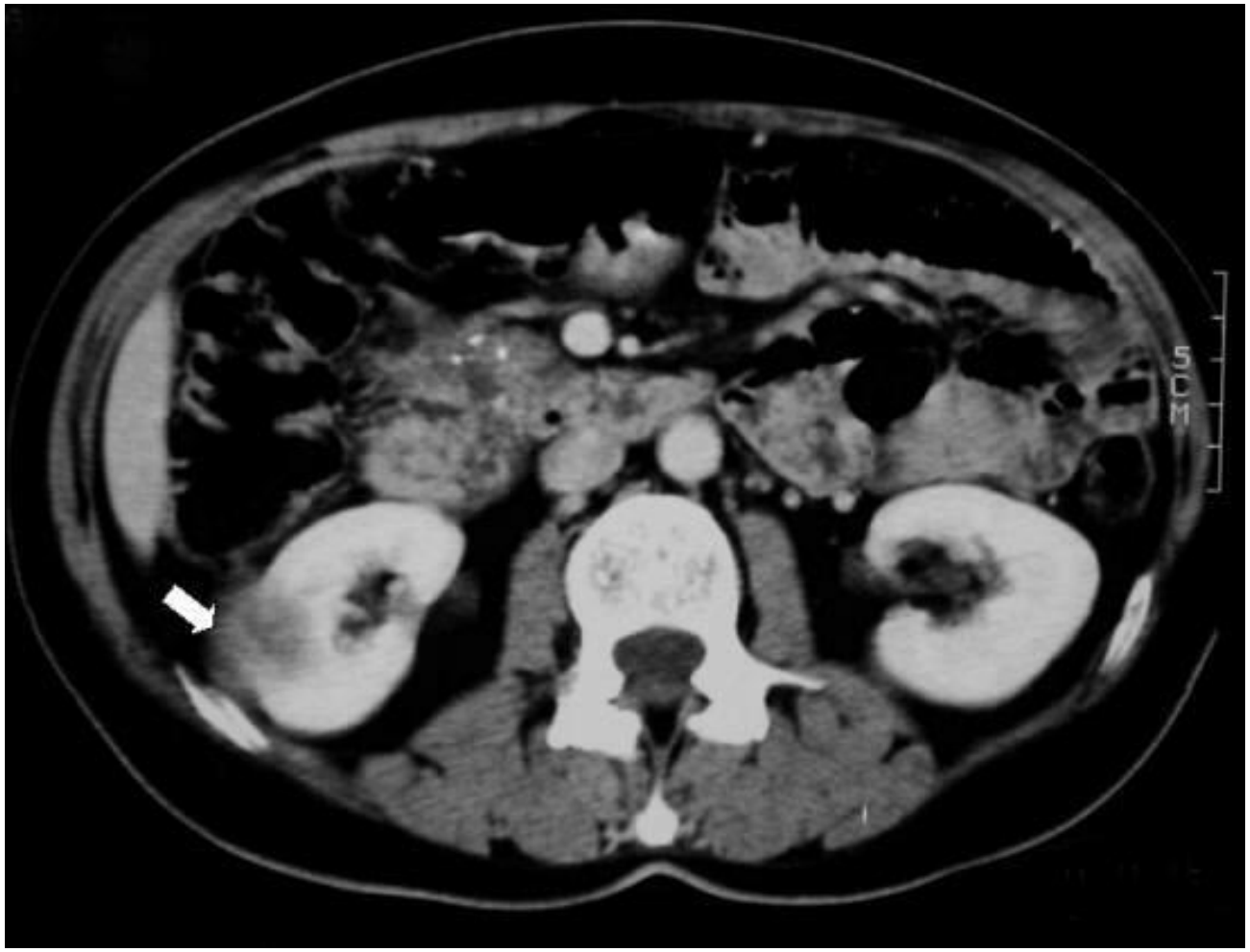
  erythrocytosis

  hypercalcaemia

  hypertension

Imaging - CT

- Gold Standard
- Enhances with IV contrast
- Heterogeneous pattern
- Pre-operative staging



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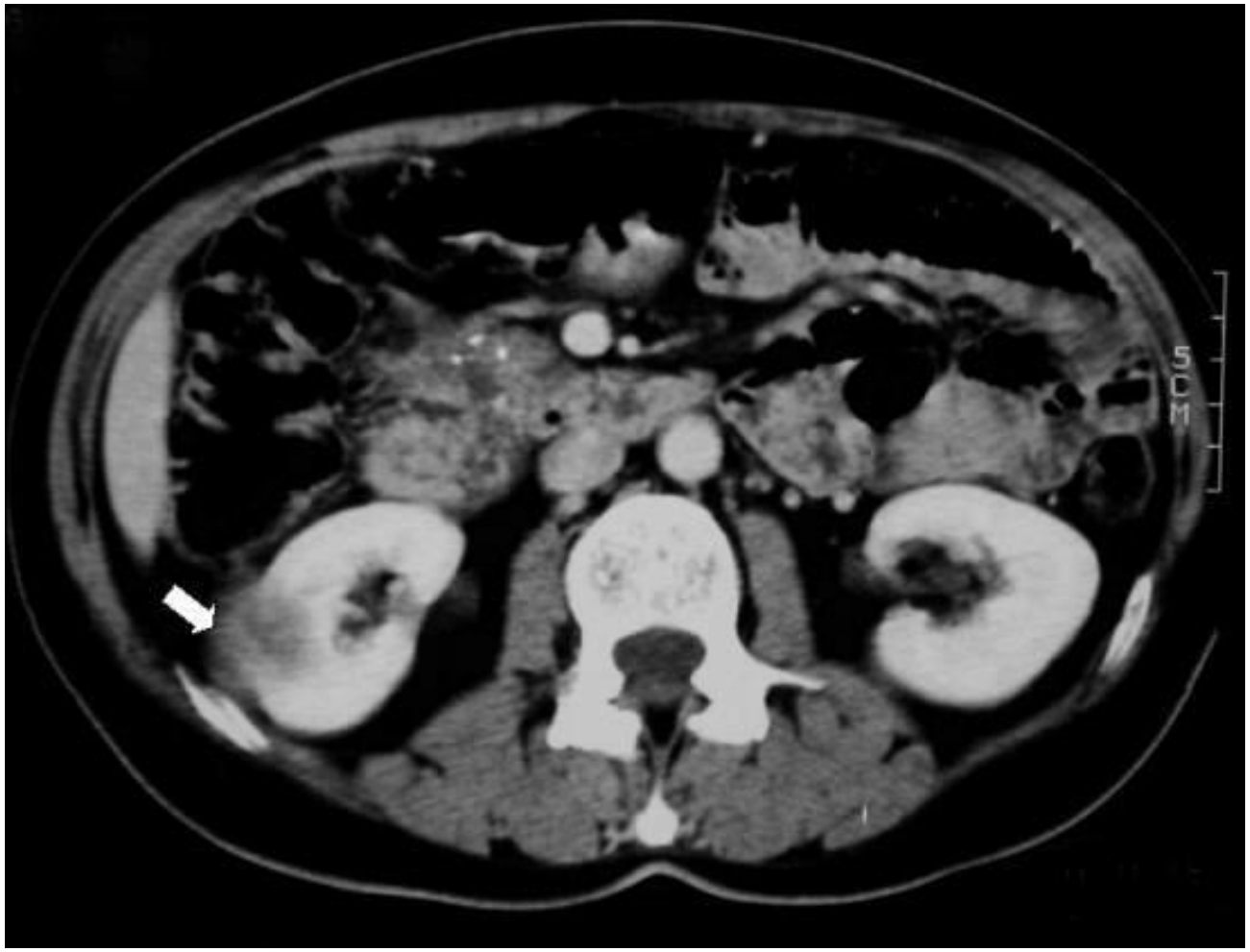


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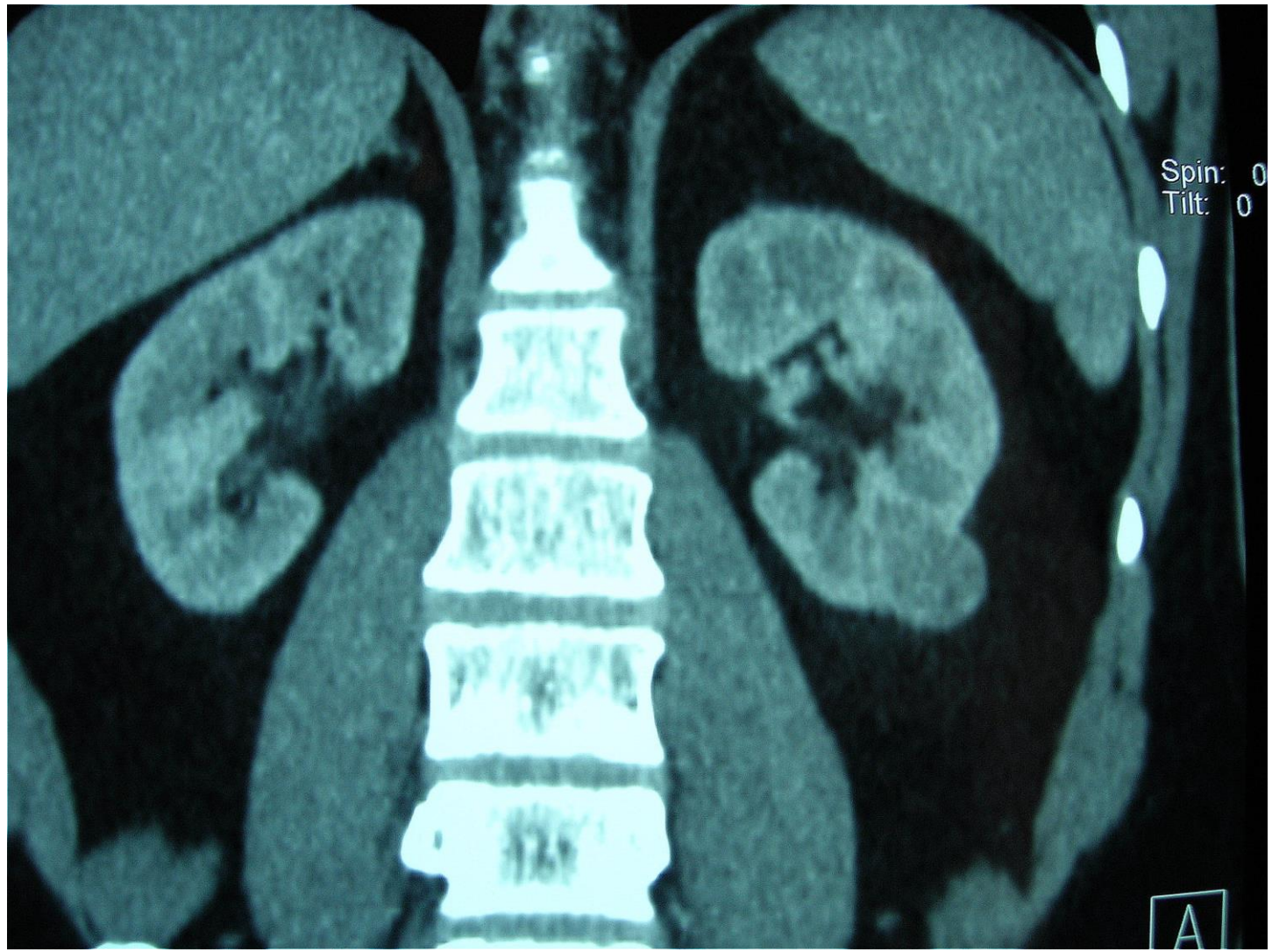
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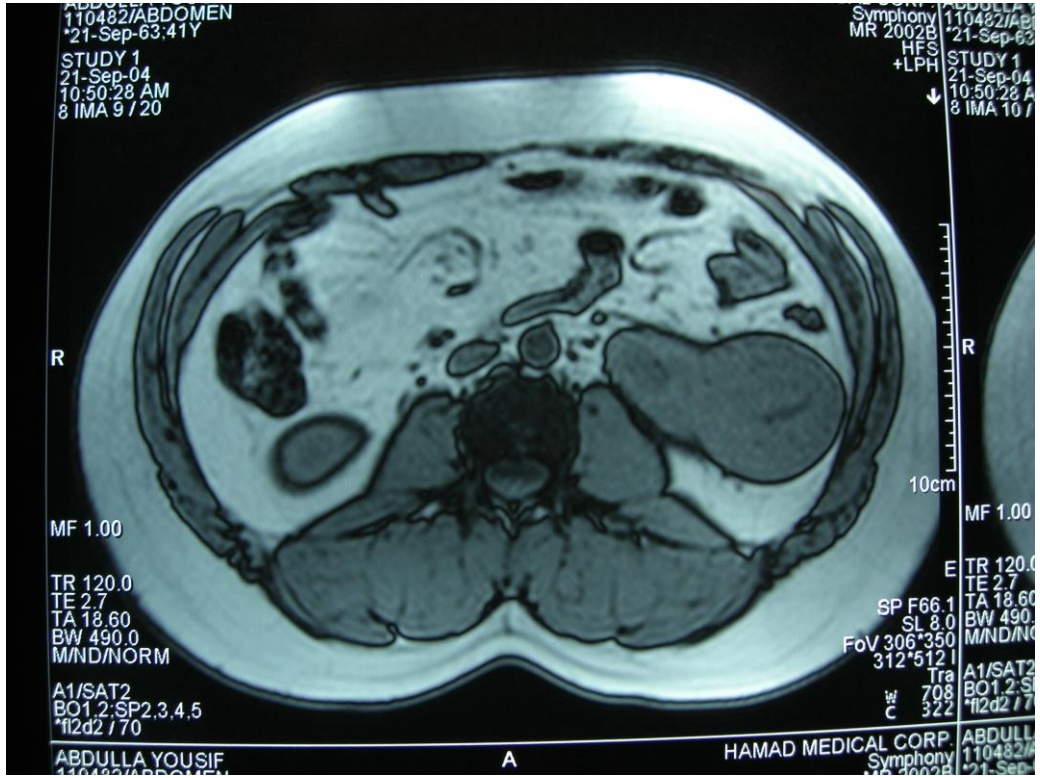
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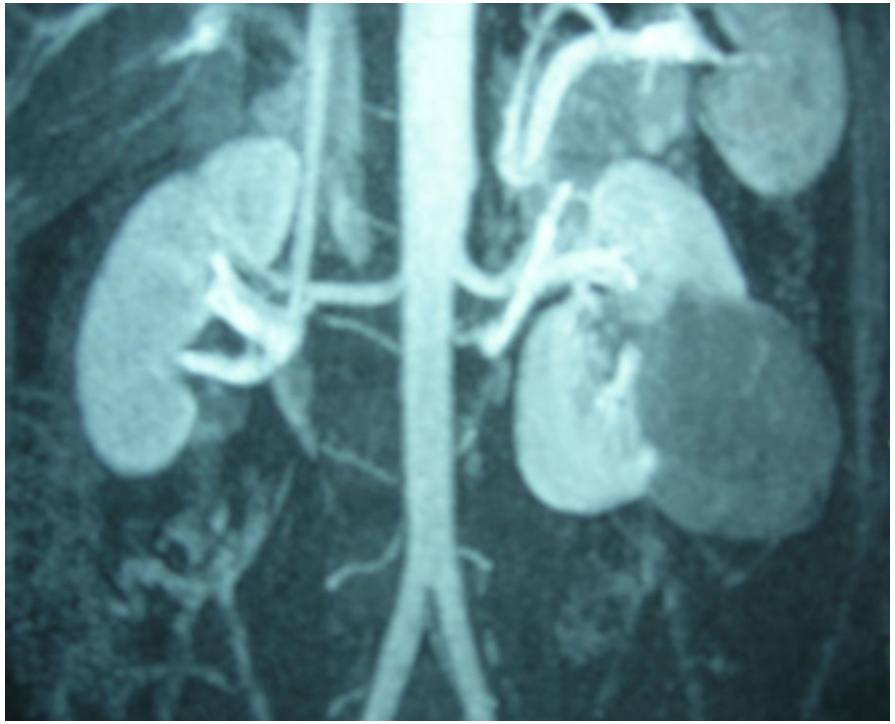

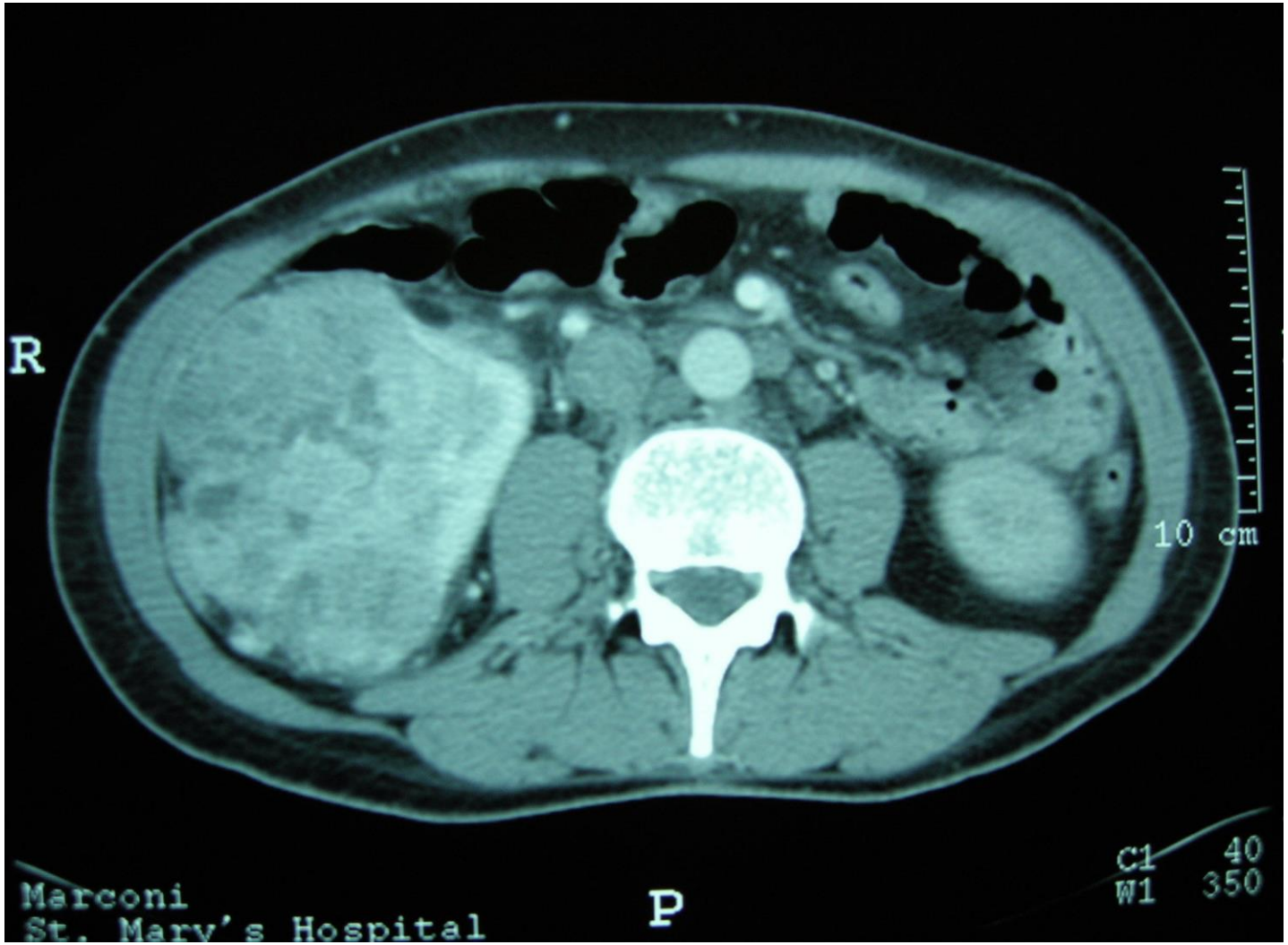
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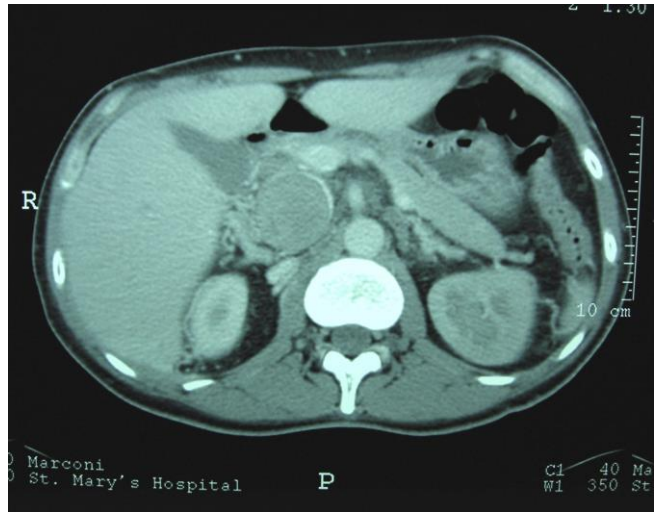
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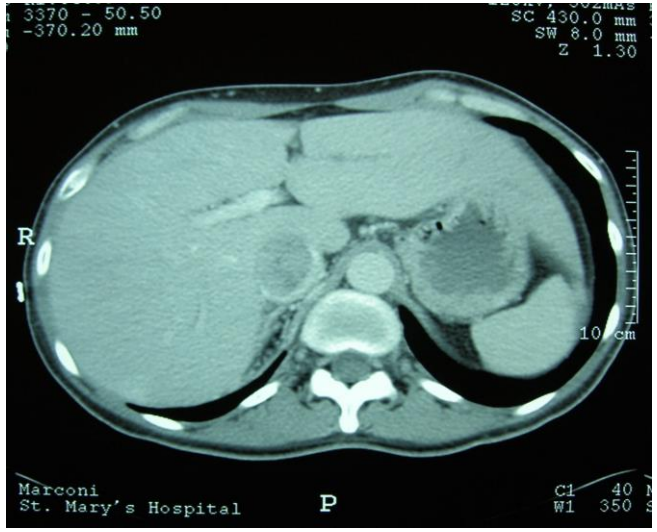
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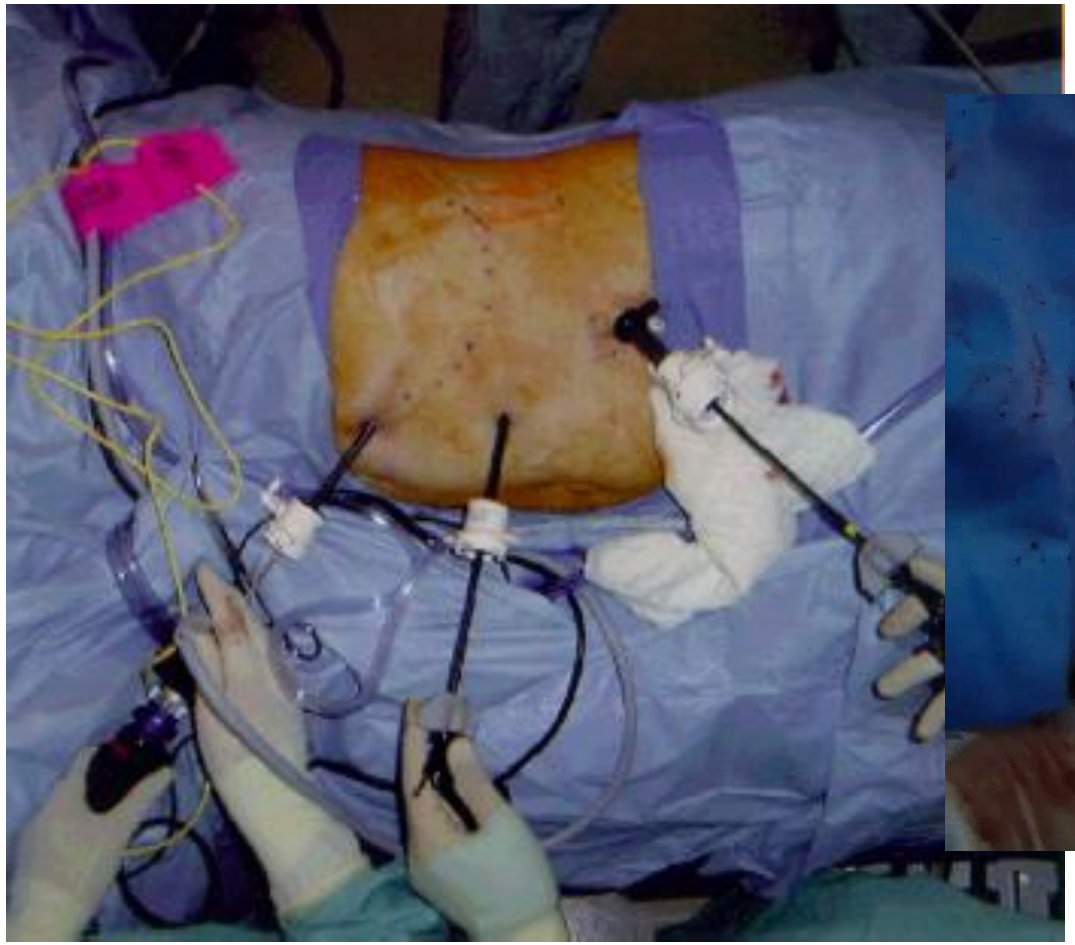
-370.20 mm
SC 430.0 mm
SW 8.0 mm
Z 1.30
R
10 cm
Marconi
St. Mary's Hospital
P
C1 40
W1 350

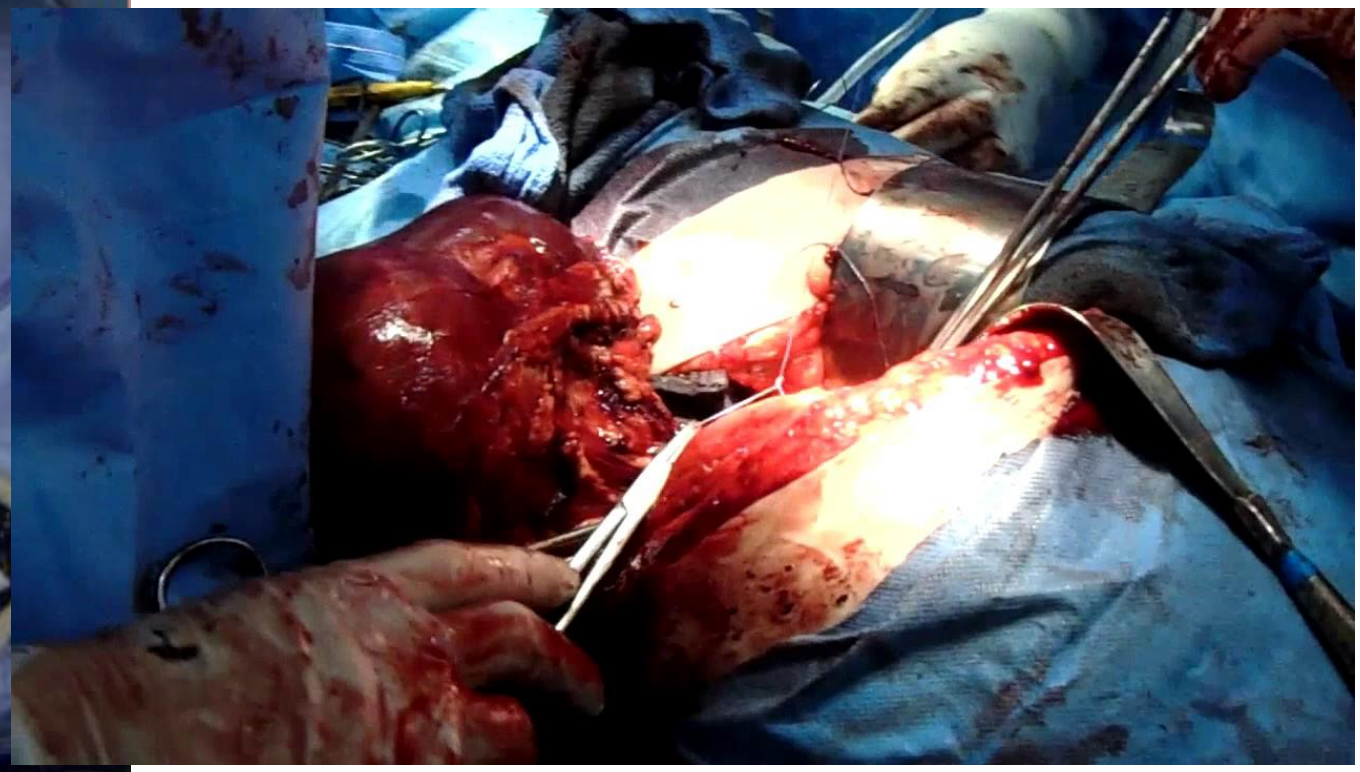
Treatment

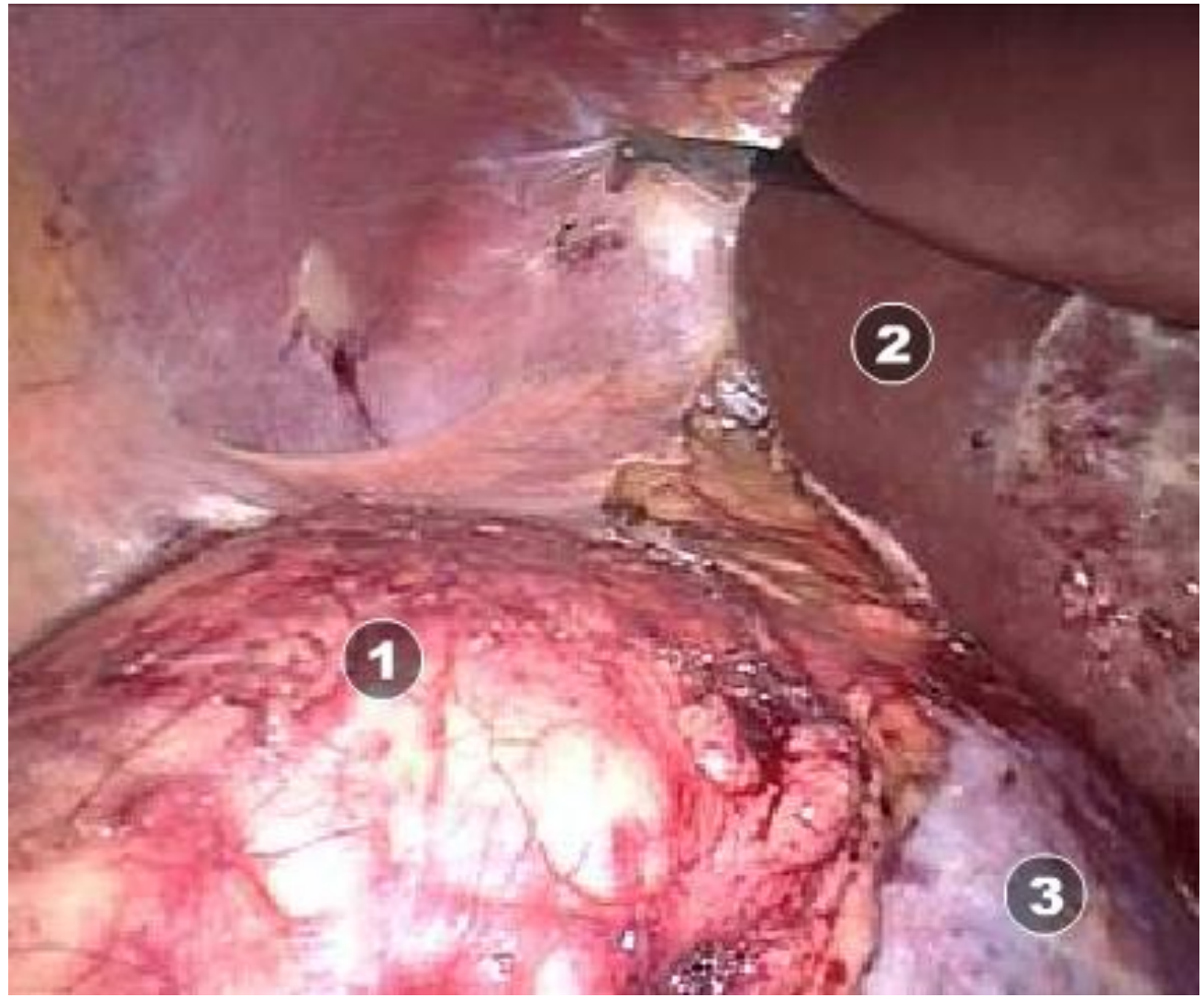
- Localised disease: *Stage I,II,IIIA* = Nephrectomy/Parital nephrectomy
- Laparoscopic (robotic) v Open
- En bloc removal: ipsilateral adrenal, proximal ureter, Gerota's fascia
- Curative
- 2-3% recurrence rate

Radical Nephrectomy

Laparoscopic versus Radical Nephrectomy



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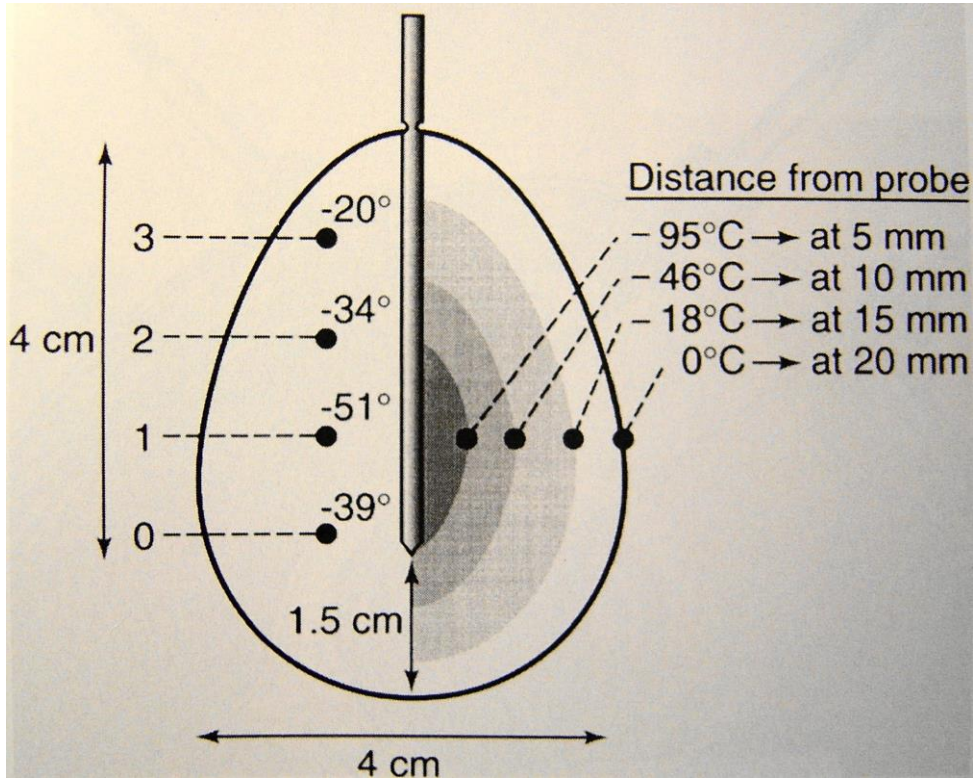
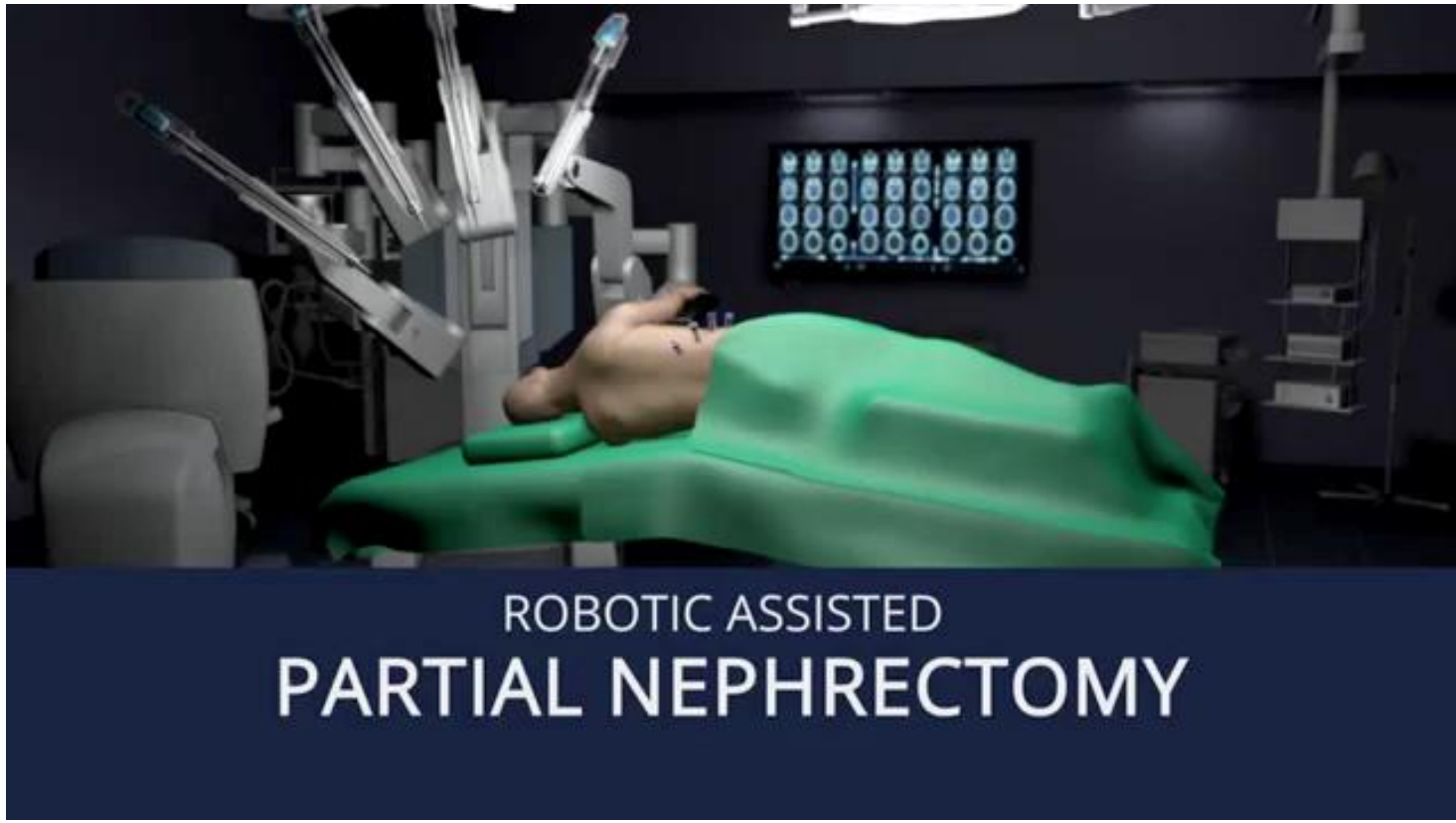
Nephron Sparing Options

Ablative therapies

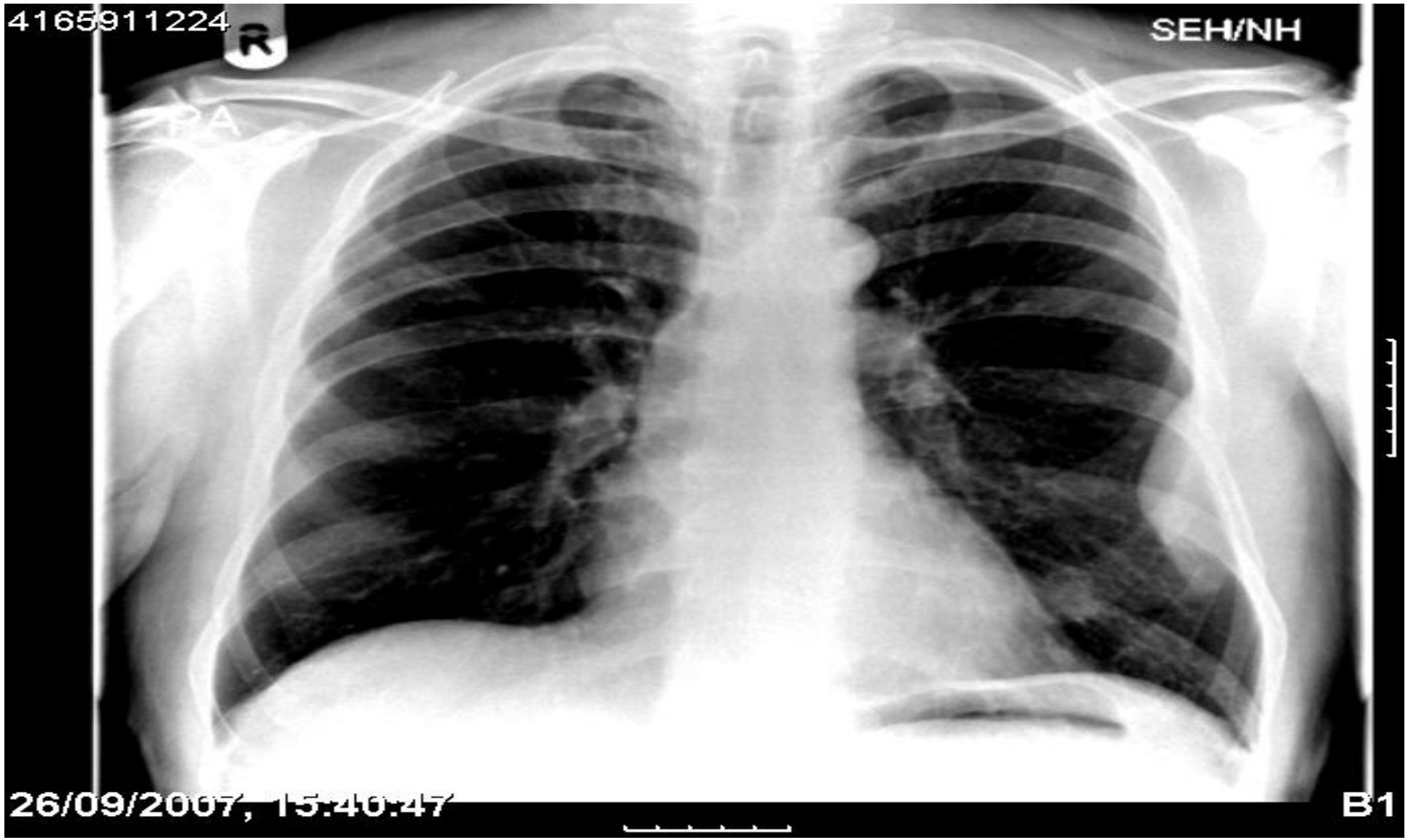


Partial nephrectomy (gold standard)



Metastatic Disease

- 30% present with advanced disease
- Radiation therapy – *effective palliation in 2/3*
- Chemotherapy – *poor*
- Immunotherapy – *TK inhibitors, interferon, interleukin 2- adjunct to debulking surgery*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Any Questions?